



REPLY PLEASE REFER TO

## State of New Jersey

### DEPARTMENT OF TRANSPORTATION

THOMAS M. DOWNS  
COMMISSIONER

1035 PARKWAY AVENUE  
CN 500  
TRENTON, NEW JERSEY 08625

Incentive/Disincentive  
for Early Completion

90122 ADU

January 28, 1993

#### MEMORANDUM

All Design Units

Subject: Direction to designers and amendments to the 1989 Standard Specifications, Incentive/Disincentive for Early completion

Reference: Memorandum to All Design Units, dated August 14, 1991,  
90071 ADU, entitled Construction Cost Estimates

The Incentive/Disincentive (I/D) dollar amounts are to be calculated (see example in attachment) using the dollar amount per day of work the contractor must accomplish to complete the I/D portion of the project plus additional incentives. It is extremely important that I/D provisions not be used routinely as most projects that have tight schedules would fall into category 2 Accelerated (see following text).

During the development of I/D projects, care shall be taken to ensure that there are very few omissions or errors in the contract documents that may result in a claim from a contractor.

Review and approval of field changes or working drawings must be promptly provided at all times that I/D work is in progress. If nighttime or weekend work is allowed in a contract, a person with authority to make decisions should be available at these times.

Any extension of time on an I/D completion date should not be given unless extra ordinary circumstances occur and the burden of proof to extend the I/D date shall be on the contractor.

The I/D time adjustments shall be limited to only those items on the critical path of the C.P.M. submitted for the project. Extending an I/D completion date should only be done when all else fails and a maximum extension has to be set to establish when incentive provisions are eliminated.

Department Project Managers shall determine at Phase 3 if higher liquidated damages or I/D clauses are to be included in a project. A request to use higher liquidated damages or I/D clauses shall be made by the

90122 ADU

January 28, 1993

Department Project Manager to the Manager of the Bureau of Roadway Plans and Specifications, in order that a final determination can be made prior to the Phase 4 submission. The Director, Division of Roadway Design, must approve the request to use higher liquidated damages. Any project that has I/D clauses must have the written approval of the Assistant Commissioner, Design and R.O.W., as well as the Director, Division of Roadway Design.

#### INCENTIVE/DISINCENTIVE (I/D) FOR EARLY COMPLETION

Incentive/Disincentive clauses are effective in encouraging early completion of construction projects and shall be used to accomplish this. However, selective use should be made of them since most projects should not include I/D clauses. The following guidelines allow all projects to be classified into one of three categories: Conventional, Accelerated and Incentive.

1. Conventional

Use normal contracting method.

2. Accelerated

- a) High road user delay or diversion costs resulting from construction activity.
- b) High traffic volumes.
- c) Involves major reconstruction of existing freeway.
- d) Benefits outweigh cost of additional construction costs.

Deserves to have construction process speeded up over normal contracting method but not I/D. Higher Liquidated Damages shall be used to encourage completion on schedule. The project bar chart shall identify the normal time and rates required to complete the work. A second bar chart for the project shall reflect the accelerated schedule and rates to achieve the work by the desired completion date.

Increased liquidated damages are most commonly used when the work to be completed must reduce the working days by up to 15%. These higher Liquidated Damages may include higher maintenance costs resulting from winter shut downs, retaining detours for an extended time and road user delay costs. These liquidated damages shall be calculated by the designer and submitted to the Regional Design Engineer and the appropriate PS&E processing unit.

90122 ADU

January 28, 1983

The following table shall be used as the maximum allowable amount for liquidated damages:

Road User Delay Costs Schedule

<u>Total Project Cost</u> <u>(in Millions)</u>	<u>Cost</u> <u>per Calendar Day</u>
0 - 0.5	1200
0.5 - 1.0	2000
1.0 - 2.0	3000
2.0 - 5.0	5000
5.0 - 10.0	6000
10.0 - 15.0	8000
15.0 - 20.0	10000
20.0 - 25.0	12000
25.0 - 50.0	15000
50.0 - ----	3/100 of 1% of Total Project Cost

3. Incentive/Disincentive (I/D)

Previous characteristics of accelerated projects; plus one or more of the following additional characteristics:

- a) Some useful part of the project can be done well before the rest of work and is of some significant benefit to the public.
- b) Project is a prerequisite to the use of some other project, i.e., to remove a serious bottleneck or to close a gap.
- c) Project is needed by a specific date to provide service to some other major traffic generator.
- d) Project will involve the prolonged reduction in the number of freeway lanes.
- e) Project is located on a freeway with a traffic density above 15,000 vehicles per day per lane of average weekday traffic.
- f) Project would require a lengthy detour.
- g) Project will take a major bridge out of service.

90122 ADU

January 28, 1993

The project bar chart shall identify the normal time and rates required to complete the work. A second bar chart for the project shall reflect the I/D schedule and rates to achieve the work by the desired completion date.

I/D provisions are most commonly used when the work to be completed must reduce the working days by more than 15%.

If the following conditions are not able to be addressed in the contract, I/D provisions shall not be used:

- a) The project should be such that the I/D phase(s) can be completed in one construction season or less.
- b) The project shall not have any changes of plan anticipated.
- c) The Plans and Specifications shall clearly indicate any unusual conditions or restrictions the contractor may be required to work under.
- d) The R.O.W. must be clear. No anticipated vacation dates for parcels involving I/D work will be permitted.
- e) Utility work by other than the contractor shall be limited to only work that will not interfere with the I/D phase(s) of the contract.
- f) The contract must clearly define what constitutes the start and the completion of the I/D phase(s).
- g) The work to be completed under the I/D provisions must be clearly defined.
- h) Any required permits must be approved and in hand.
- i) No approval of Shop Drawings by Conrail is required as they require a minimum of 30 days for review.

If the project can be classified a Type 3 Incentive/Disincentive (I/D) and conditions (a) through (i) can be addressed in the contract, the project would be eligible to be considered for I/D provisions.

A daily I/D amount must be calculated on a project by project basis. The designer in conjunction with Region Design and the appropriate PS&E processing unit shall determine the dollar amount per day for the I/D provisions. Attachment No. 1 of this A.D.U. is an example of how an I/D amount may be calculated.

90122 ADU

January 28, 1993

On all Projects, a daily I/D amount must also be calculated using established construction engineering inspection costs, State related traffic control and maintenance costs, detour costs and road user costs. These aforementioned combined costs must be kept as a back-up in case there is a dispute between the contractor and the State which would have to be settled in court. In almost all cases in this State, the combined cost will be larger than the cost calculated in Attachment No. 1. The combined cost should not be used as it will most likely be too large and exceed the Federal guidelines for the maximum amount that should be used for I/D purposes. If the combined cost is less than the cost calculated in Attachment No. 1 method, then consideration should be given that this is not an appropriate project for I/D use.

The total amount of premium time required to complete the work within the time stipulated shall be calculated. The cost of working this premium time (i.e., overtime, extra equipment for multiple crews and extra material costs) shall be calculated per day. When this cost per day has been determined, an additional incentive amount shall be established to take into account the size of the project and the difficulty to expedite the work. A maximum time shall be established that the incentive amount will be paid. On previous projects this time has ranged from 10 to 60 calendar days. The actual time frame for payment will be determined by the designer, the Regional Design Engineer, the Bureau of Construction, and the appropriate PS&E Processing Unit.

The dollar amount must be of sufficient benefit to the contractor to encourage his interest, stimulate innovative ideas and increase the profitability of meeting tight schedules. Generally, the incentive daily rate shall equal the disincentive daily rate. If different rates are selected, the incentive daily rate shall not exceed the disincentive daily rate. A cap of 5 percent of the total contract amount is recommended as the maximum incentive payment. The disincentive rate shall be shown in Subsection 108.16 of the Supplementary Specifications.

A calendar date for beginning the I/D work and a calendar date for completing the I/D work shall be used as these are easily understood. Working days shall not be used. The season of the year, estimated days lost to weather and legal holidays shall be included when computing the calendar date completion date. This date shall be reviewed by the appropriate PS&E processing unit.

90122 ADU

January 28, 1993

On Federal Projects only, the Project Manager shall submit both I/D amounts and the time determination with supporting data to the PS&E processing unit who will submit it to F.H.W.A. for their concurrence. This must be done before a P.S. & E. is submitted to F.H.W.A. for authorization to advertise.

On Certification Acceptance (C.A.) Projects, F.H.W.A. concurrence must be obtained before the C.A. package is submitted to F.H.W.A.

The determination of I/D amounts and time, and the approvals required shall be documented and submitted to the unit responsible for advertising the project so this information can be retained in the project files.

The maximum amount of time that an I/D completion date shall be extended will be 10 percent of the time allowed for constructing that I/D portion of the contract.

The following text is an example to be used when preparing the I/D Specifications. Each I/D Specification must be tailored to fit each contract. The underlined text is that which would have to be changed to fit a specific project.

108.10 TIME OF COMPLETION.

(A) ALL WORK REQUIRED TO OPEN THE WESTBOUND LOCAL STRUCTURE 17A TO TRAFFIC SHALL BE COMPLETED ON OR BEFORE DECEMBER 1, 1989.

(B) ALL WORK REQUIRED FOR SUBSTANTIAL COMPLETION OF THE PROJECT, EXCLUDING THE ITEM PAINTING BRIDGES-EXISTING STEEL SHALL BE COMPLETED ON OR BEFORE DECEMBER 15, 1990.

(C) THE ENTIRE WORK OF THE PROJECT SHALL BE COMPLETED ON OR BEFORE MAY 18, 1991.

108.16 FAILURE TO COMPLETE ON TIME.

THE SCHEDULE OF LIQUIDATED DAMAGE FOR EACH DAY OF OVERRUN IN CONTRACT TIME ON PAGE 82 OF THE STANDARD SPECIFICATIONS IS CHANGED TO:

1. FOR EACH CALENDAR DAY THE CONTRACTOR FAILS TO COMPLETE CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH A, THE CONTRACTOR SHALL PAY THE STATE AN AMOUNT OF \$10,000.

2. FOR EACH CALENDAR DAY THE CONTRACTOR FAILS TO THE COMPLETE CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH B, THE CONTRACTOR SHALL PAY THE STATE AN AMOUNT OF \$5,000.

90122 ADU

January 28, 1993

3. FOR EACH CALENDAR DAY THE CONTRACTOR FAILS TO COMPLETE THE ENTIRE WORK OF THE PROJECT AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH C. THE CONTRACTOR SHALL PAY THE STATE LIQUIDATED DAMAGES OF \$700, EXCEPT THAT IF THE CONSTRUCTION OPERATIONS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH B, ARE NOT COMPLETE THE CONTRACTOR SHALL PAY THE AMOUNT SPECIFIED IN PARAGRAPH 2 ABOVE.

To be inserted at the end of Section 109.

THE FOLLOWING IS ADDED TO THIS SECTION:

INCENTIVE PAYMENTS FOR EARLY COMPLETION.

A. FOR EACH CALENDAR DAY PRIOR TO DECEMBER 1, 1989, THE CONTRACTOR COMPLETES CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH A, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$10,000 UP TO A MAXIMUM AMOUNT OF \$500,000. HOWEVER, IF FOR ANY REASON (INCLUDING, BUT NOT LIMITED TO, ACTS, ERRORS, OR FAILURES TO ACT, OF THE STATE, OTHER GOVERNMENT BODIES, THE DEPARTMENT'S DESIGN FORCES, SUPPLIERS, SUBCONTRACTORS, FABRICATORS, MANUFACTURERS, OR ANY THIRD PARTY, OR AS A RESULT OF STRIKES, MATERIAL SHORTAGES, WEATHER CONDITION OR ACTS OF GOD), AN EXTENSION OF TIME IS GRANTED BY THE STATE, THE INCENTIVE PAYMENT WILL BE IN ACCORDANCE WITH PARAGRAPHS 1 AND 2 BELOW:

1. IF AN EXTENSION OF TIME IS GRANTED FOR TEN CALENDAR DAYS OR LESS: A NEW COMPLETION DATE WILL BE DETERMINED BY ADDING THE DAYS OF APPROVED EXTENSION TO THE ORIGINAL COMPLETION DATE. FOR EACH CALENDAR DAY PRIOR TO THE NEW COMPLETION DATE THE CONTRACTOR COMPLETES CONSTRUCTION OPERATION AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH A, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$10,000 UP TO A MAXIMUM AMOUNT OF \$500,000.
2. IF AN EXTENSION OF TIME IS GRANTED FOR MORE THAN TEN CALENDAR DAYS: FOR EACH CALENDAR DAY PRIOR TO DECEMBER 1, 1989, THE CONTRACTOR COMPLETES CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH A, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$10,000 UP TO A MAXIMUM AMOUNT OF \$500,000.

90122 ADU

January 28, 1993

B. FOR EACH CALENDAR DAY PRIOR TO DECEMBER 15, 1990, THE CONTRACTOR COMPLETES CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH B, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$5,000 UP TO A MAXIMUM AMOUNT OF \$250,000. HOWEVER, IF FOR ANY REASON (INCLUDING, BUT NOT LIMITED TO, ACTS, ERRORS, OR FAILURES TO ACT, OF THE STATE, OTHER GOVERNMENT BODIES, THE DEPARTMENT'S DESIGN FORCES, SUPPLIERS, SUBCONTRACTORS, FABRICATORS, MANUFACTURERS, OR ANY THIRD PARTY, OR AS A RESULT OF STRIKES, MATERIAL SHORTAGES, WEATHER CONDITIONS, OR ACTS OF GOD), AN EXTENSION OF TIME IS GRANTED BY THE STATE THE INCENTIVE PAYMENT WILL BE IN ACCORDANCE WITH PARAGRAPHS 1 AND 2 BELOW:

1. IF AN EXTENSION OF TIME IS GRANTED FOR TEN CALENDAR DAYS OR LESS: A NEW COMPLETION DATE WILL BE DETERMINED BY ADDING THE DAYS OF APPROVED EXTENSION TO THE ORIGINAL COMPLETION DATE. FOR EACH CALENDAR DAY PRIOR TO THE NEW COMPLETION DATE THE CONTRACTOR COMPLETES CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH B, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$5,000 UP TO A MAXIMUM AMOUNT OF \$250,000.
2. IF AN EXTENSION OF TIME IS GRANTED FOR MORE THAN TEN CALENDAR DAYS: FOR EACH CALENDAR PRIOR TO DECEMBER 15, 1990, THE CONTRACTOR COMPLETES CONSTRUCTION OPERATIONS AS SPECIFIED IN SUBSECTION 108.10, PARAGRAPH B, THE CONTRACTOR WILL RECEIVE AN INCENTIVE PAYMENT OF \$5,000 UP TO A MAXIMUM AMOUNT OF \$250,000.

C. THE CONTRACTOR SHALL HAVE NO RIGHT TO, NOR SHALL HE MAKE ANY CLAIM FOR ADDITIONAL COMPENSATION AS THE RESULT OF, EXTENSIONS OR REDUCTIONS OF TIME BEING GRANTED BY THE STATE WHICH RESULT IN THE PAYMENT FOR EARLY COMPLETION BEING REDUCED OR ELIMINATED. MOREOVER, NOTHING HEREIN SHALL EFFECT THE LIQUIDATED DAMAGES AS SPECIFIED IN SUBSECTION 108.16, WHICH WILL REMAIN IN FULL FORCE AND EFFECT REGARDLESS OF THE REDUCTION OR ELIMINATION OF PAYMENTS FOR EARLY COMPLETION.

D. SHOULD THE CONTRACTOR BE DUE INCENTIVE PAYMENTS FOR EARLY COMPLETION, THEY WILL BE MADE IN TWO PAYMENTS. THE FIRST PAYMENT WILL BE MADE AFTER DECEMBER 15, 1989 WHEN A CHANGE ORDER PREPARED BY THE STATE HAS BEEN FULLY PROCESSED. THE SECOND PAYMENT WILL BE MADE AFTER DECEMBER 29, 1990 WHEN A CHANGE ORDER PREPARED BY THE STATE HAS BEEN FULLY PROCESSED.

Additional changes to the Specifications shall be made in Subsection 105.04 Working Drawings depending on the work of the contract involving the I/D work only. Time limits for review and approval of shop drawings to 7 days shall be inserted. Permitting the contractor to order materials before receiving shop drawing approvals might be permitted under certain conditions.



90122 ADU

January 28, 1993

The following text shall also be added to Subsection 105.01 Authority of the Engineer:

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

THE RESIDENT ENGINEER, AFTER NOTIFICATION BY THE CONTRACTOR, WILL REVIEW AND ANSWER WITHIN 3 DAYS ANY QUESTIONS CONCERNING THE INCENTIVE-DISINCENTIVE PORTION OF THE CONTRACT.

ATTACHMENT NO. 1

The time allowed by the Department for Stage 4 to be in effect is 2 months. Stage 4 must also be completed no later than June 30, 1993. Stage 4 contains a detour which will require traffic to travel approximately 4 miles.

The Estimated cost of work in Stage 4 at Jones Road = \$500,000.00

Normal working time.

The estimated time using normal contractor productivity rates necessary to complete the work on Jones Road and open the roadway to traffic is 50 working days.

Then  $\frac{\$500,000}{50 \text{ W.D.}} = \$10,000$  of work/W.D.

Labor cost is =  $\$10,000 \times 30\% = \$3,000.00/\text{day}$ . (30% \* of in-place cost is normal labor)

The additional labor cost to work overtime is =  $\$3,000.00/\text{day} \times 50\% = \$1,500/\text{day}$ . 50% is the additional labor cost to work overtime)

Working Days

60 calendar days committed to by the Department.  
50 working days required to complete work.  
40 working days available

The normal working time available for the 2 months is 40 working days.

To complete in 40 days

The equivalent of 10-8 hour shifts of overtime is required to complete the work on schedule.

Over Time included in the bid will be  $\$1,500/\text{day} \times 10 \text{ days} = \$15,000$ .

\* Percentage may vary from Project to Project.

MEMORANDUM  
All Design Units

-10-

Incentive/Disincentive  
for Early Completion

90122 ADU

January 28, 1993

Incentive to work the additional overtime and complete the work ahead of schedule is as follows:

10 days x \$10,000 work/day = \$100,000 of work  
100,000 x 10% additional incentive = \$10,000  
\$10,000/10 days max = \$1,000 additional incentive/day

The total per day incentive/disincentive  $\$1,500 + 1,000 = \$2,500/\text{day}$  for 10 days = \$25,000

As a check the FHWA Technical Advisory T5080.10, dated February 8, 1989, recommends a cap of 5 percent of the total contract amount as the maximum I/D payment, hence

5% of the total work =  $500,000 \times 5\% = \$25,000.00$  (check)

RECOMMENDED BY:

APPROVED BY:

Robert K. Suess

Robert K. Suess  
Chief, Bureau of Roadway  
Plans and Specifications

Charles Takacs

Charles Takacs  
Director of Roadway Design  
(Chief Engineer of Roadway Design)

Implementation Code B

CT:CR:ab